PATENT
Serial No. 10/511,369
Appeal Brief in Reply to the Final Office Action of June 5, 2009
and the Advisory Action of August 18, 2009

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method, operable in a computer system, for analyzing of speech, the method causing the computer system to execute the ~~steps~~ acts of:

[[-]] inputting a speech ~~signal,~~ signal;

[[-]] obtaining a first harmonic of the speech signal,

[[-]] determining a phase-difference (Δφ) between the speech signal and the first harmonic for centering a windowing function, wherein said phase difference is determined between a phase of a maximum amplitude of said speech signal and a phase zero of the first harmonic ~~of the speech signal~~ where an amplitude of the first harmonic is zero; and

outputting the phase difference to a memory for storage.

PATENT
Serial No. 10/511,369
Appeal Brief in Reply to the Final Office Action of June 5, 2009
and the Advisory Action of August 18, 2009

2.(Currently Amended) The method of claim 1, ~~the~~

~~determination of the phase difference comprising the steps of:~~

[[-]] <u>wherein the determining comprises the act of</u>

determining a location of said maximum of the speech ~~signal,.~~

<u>signal.</u>

3.(Previously Presented) The method of claim 1, whereby the speech signal is a diphone signal.

4.(Currently Amended) A method for synthesizing speech, the method, operable in a computer system, comprising the ~~steps~~ <u>acts</u> of:

<u>windowing by a window function diphone samples obtained from a</u> <u>speed signal;</u>

[[-]] selecting ~~of~~ <u>the</u> windowed diphone samples, ~~the diphone~~

~~samples being windowed by a~~ <u>wherein the</u> window function ~~being~~ <u>is</u>

centered with respect to a phase angle which is determined as a

phase difference between a <u>phase of a</u> maximum <u>amplitude</u> of said

PATENT
Serial No. 10/511,369
Appeal Brief in Reply to the Final Office Action of June 5, 2009
and the Advisory Action of August 18, 2009

speech signal and a phase zero of a zero crossing of a first

harmonic of the speech ~~signal,~~ signal where an amplitude of the

first harmonic is zero; and

[[-]] concatenating the selected windowed diphone samples to

form the synthesized speech; and

outputting the synthesized speech.

5.(Original) The method of claim 4, the speech signal being a

diphone signal.

6.(Previously Presented) The method of claim 4, the window

function being a raised cosine or a triangular window.

7.(Previously Presented) The method of claim 4 further

comprising inputting of information being indicative of diphones

and a pitch contour, the information forming the basis for

selecting of the windowed diphone samples.

8.(Currently Amended) The method of ~~claim 4, whereby~~ claim 7,

PATENT
Serial No. 10/511,369
Appeal Brief in Reply to the Final Office Action of June 5, 2009
and the Advisory Action of August 18, 2009

wherein the information is provided from a language processing

module of a text-to-speech system.

9. (Currently Amended) The method of claim 4 further

comprising the acts of:

[[-]] inputting of speech, and

[[-]] windowing the speech by means of the window function to

obtain the windowed diphone samples.

10. (Currently Amended) A computer readable medium storing a

computer program product which when loaded into a computer system

caused the computer system to perform a method in accordance with

claim 1.

11. (Currently Amended) A speech analysis device for analyzing

a speech signal comprising:

[[-]] means for inputting of a speech signal,

[[-]] means a filter for obtaining a first harmonic of the

speech signal,

PATENT
Serial No. 10/511,369
Appeal Brief in Reply to the Final Office Action of June 5, 2009
and the Advisory Action of August 18, 2009

[[-]] ~~means for~~ a processor for determining a phase

difference ($\Delta\varphi$) between the speech signal and the first harmonic

for centering a windowing function, wherein said phase difference

is determined between a phase of a maximum amplitude of said speech

signal and a phase zero (φ_0) of the ~~speech signal~~ first harmonic

where an amplitude of the first harmonic is zero.

Claim 12 (Canceled)

13. (Previously Presented)   The speech analysis device of claim

11, wherein the speech signal is a diphone signal.

14. (Currently Amended)   A speech synthesis device comprising a

processor configured for:

[[-]] ~~means for~~ selecting of windowed diphone samples of a

speech signal, the diphone samples being windowed by a window

function being centered with respect to a phase angle which is

determined as a phase difference between ~~a~~ the speech signal and a

first harmonic of the speech ~~signal,,~~ signal, wherein said phase

PATENT
Serial No. 10/511,369
Appeal Brief in Reply to the Final Office Action of June 5, 2009
and the Advisory Action of August 18, 2009

difference is determined between a <u>phase of a</u> maximum <u>amplitude</u> of

said speech signal and a phase zero of the first harmonic of the

speech ~~signal~~ <u>signal where an amplitude of the first harmonic is</u>

<u>zero; and</u>

    [[-]] ~~means for~~ concatenating the selected windowed diphone

signals.

    15.(Original) The speech synthesis device of claim 14,

wherein the speech signal is a diphone signal.

    16.(Previously Presented) The speech synthesis device of

claim 14 the window function being a raised cosine or a triangular

window.

    17.(Currently Amended) The speech synthesis device of claim

~~14 further comprising means for inputting of~~ <u>14, wherein the</u>

<u>processor is further configured to receive</u> information ~~being~~

indicative of diphones and a pitch contour, ~~the means for selecting~~

<u>and to select</u> the windowed diphones ~~being adapted to perform the~~

PATENT
Serial No. 10/511,369
Appeal Brief in Reply to the Final Office Action of June 5, 2009
and the Advisory Action of August 18, 2009

~~selection~~ based on the information.

18. (Currently Amended)   A text-to-speech system comprising:

[[-]]   a_language ~~processing means~~ processor_for providing ~~of~~ information being indicative of diphones and a pitch ~~contour,~~ contour of a speech signal; and

[[-]]   a_speech ~~synthesis means comprising means for~~ synthesizer configured to:

[[-]]   ~~selecting of~~ select_windowed diphone samples based on the information, the diphone samples being windowed by a window function being centered with respect to a phase angle which is determined as a phase difference between a phase of a_maximum amplitude_of said speech signal and a first harmonic of the speech signal_where an amplitude of the first harmonic is zero; and

_____[[-]]   ~~means for concatenating~~ concatenate_the selected windowed diphone samples.

19. (Original)   The text-to-speech system of claim 18, whereby the window function is a raised cosine or a triangular window.

PATENT
Serial No. 10/511,369
Appeal Brief in Reply to the Final Office Action of June 5, 2009
and the Advisory Action of August 18, 2009

20.(Currently Amended) A speech processing system comprising a processor configured to:

[[-]] ~~means for inputting of~~ receive a signal comprising natural speech signal,

[[-]] ~~means for windowing~~ window the natural speech signal by ~~means of~~ a window function being centered with respect to a phase angle determined as a phase difference between a phase of a maximum amplitude of said natural speech signal and a first harmonic of the natural speech signal where an amplitude of the first harmonic is zero to provide windowed diphone samples,

[[-]] ~~means for processing of~~ process the windowed diphone samples, and

~~means for concatenating~~ concatenate the selected windowed diphone samples.

21.(New) The method of claim 1, wherein the phase zero is where the amplitude of the first harmonic crosses zero in a transition from a negative amplitude to a positive amplitude of the

PATENT
Serial No. 10/511,369
Appeal Brief in Reply to the Final Office Action of June 5, 2009
and the Advisory Action of August 18, 2009

first harmonic.

    22.(New) The method of claim 1, further comprising the act of extracting diphones from the speech signal, wherein the obtaining act includes low-pass filtering of the diphones.

    23.(New) The method of claim 4, wherein the window function is centered on the phase angle which is equal to the phase difference plus the phase zero.

    24.(New) The method of claim 4, wherein the window function is be symmetric with respect to the phase angle.

    25.(New) The method of claim 4, wherein the window function and the diphone samples that are windowed are offset by the phase difference.